CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory
An ISO 9001:2015 Certified Company
NABL - Accredited Laboratory as per ISO / IEC-17025 : 2017

Job No.: CTCE/BBMP/KMAN/CSR-280f/CEMENT/2020-21

Date: 02.12.2020

TEST REPORT ON CEMENT

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Cement
Sample Received on	:	01.12.2020
Period of Testing	:	01.12.2020 to 02.12.2020
Report Issue Date	:	02.12.2020

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 269:2015
1	Standard Consistency	IS-4031 (Part -4) : 1988 (RA-2019)	28.00 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) : 1988 (RA-2019)	195 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) : 1988 (RA-2019)	380 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) : 1988 (RA-2019)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

Note:

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

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Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.
Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/CSR-280f/SAND-Gradation/2020-21 02.12.2020

TEST REPORT ON SIEVE ANALYSIS OF FINE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	Sri.K.M.Aswatha Narayana, Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Fine Aggregates (Manufactured Sand)
Test Method As Per	:	IS - 2386 (Part 1) : 1963 (RA-2016)
Sample Received On	:	01.12.2020
Date of Testing	:	02.12.2020
Report Issue Date	:	02.12.2020

Total Wt. of Aggregates in gms = 1000

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-2016			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	97.90	90-100	90-100	90-100	95-100
2.36	82.70	60-95	75-100	85-100	95-100
1.18	71.20	30-70	55-90	75-100	90-100
600 Micron	51.10	15-34	35-59	60-79	80-100
300 Micron	24.60	5-20	8-30	12-40	15-50
150 Micron	6.40	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-II specific limits.

Note 1 :
For crushed stone sands, the permissible limit on 150-micron IS Sieve is increased to 20 percent. This does not affect the 5 percent allowance permitted in 4.3 of IS 383 applying to other sieve sizes.

Note 2:

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M/s. Civil-Tech Consultants & Engineers

Pooja K.L.

Authorised Signatory

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Job No.: CTCE/BBMP/KMAN/CSR-280f/AGG/GR/2020-21 02.12.2020

TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Coarse Aggregates (40mm)
Test Method As Per	:	IS - 2386 (Part 1) : 1963 (RA-2016)
Sample Received on	:	01.12.2020
Date of Testing	:	02.12.2020
Report Issue Date	:	02.12.2020

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS - 383 : 2016	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.20	95-100	85-100
20	40.30	30-70	0-20
10	16.10	10-35	0-5
4.75	3.58	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under graded specific limits.

Note:

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For M/s. Civil-Tech Consultants & Engineers

Pooja K.L.

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Job No.: CTCE/BBMP/KMAN/CSR-280f/AGG/GR/2020-21

02.12.2020

TEST REPORT ON SIEVE ANALYSIS OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Coarse Aggregates (20mm)
Test Method As Per	:	IS - 2386 (Part 1) : 1963(RA-2016)
Sample Received on	:	01.12.2020
Date of Testing	:	02.12.2020
Report Issue Date	:	02.12.2020

Total Wt. of Aggregates in gms= **5000**

IS Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS - 383 : 2016	
		Graded	Single Sized
40	100	100	100
20	97.10	95-100	85-100
10	30.90	25-55	0-20
4.75	5.30	0-10	0-5

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬಿಬಿಎಂಪಿ, ಬೆಂಗಳೂರು.

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Job No.: CTCE/BBMP/KMAN/Steel/2020-21 05.12.2020

TEST REPORT ON REINFORCEMENT STEEL

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Samples ID	:	10 mm Bar
Test Method as per	:	IS - 1786 : 2008 (RA-2018)
Date of Testing	:	05.12.2020
Report Issue Date	:	05.12.2020

Sl No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm2	Tensile strength (Ultimate stress) N/mm2	Elongation percent gauge length		
1	10	0.62	514	555	13.15	O.K	O.K

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Job No.: CTCE/BBMP/KMAN/CSR-280E/Cube/2020-21

16.12.2020

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	RCC Drain Raft Concrete
Test Method as per	:	IS - 516 : 1959 (RA-2018)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	7^{th} day
Sample Received on	:	16.12.2020
Report Issue Date	:	16.12.2020

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	09.12.2020	16.12.2020	8.456	320.1	14.23
2	09.12.2020	16.12.2020	8.123	330.5	14.69
3	09.12.2020	16.12.2020	8.369	349.4	15.53

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Job No. CTCE/BBMP/KMAN/CSR-280f/Cube/2020-21 06.01.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	RCC Drain Raft Concrete
Test Method as per	:	IS - 516 : 1959 (RA-2018)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	06.01.2021
Report Issue Date	:	06.01.2021

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	09.12.2020	06.01.2021	8.147	479.6	21.32
2	09.12.2020	06.01.2021	8.258	484.8	21.55
3	09.12.2020	06.01.2021	8.593	499.3	22.19

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Job No.: CTCE/BBMP/KMAN/CSR-280f/Cube/2020-21 19.12.2020

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	RCC Drain Side Wall Concrete
Test Method as per	:	IS - 516 : 1959 (RA-2018)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	7^{th} day
Sample Received on	:	19.12.2020
Report Issue Date	:	19.12.2020

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	12.12.2020	19.12.2020	8.160	342.1	15.21
2	12.12.2020	19.12.2020	8.357	338.7	15.05
3	12.12.2020	19.12.2020	8.260	327.0	14.53

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Job No:- CTCE/ BBMP/ KOMAN/ CSR-2808/ Cube/ 2020-21

09.01.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	: Asst. Executive Engineer, Sheeryhalli Sub Division, BBMP, Bangalore.
* Agency	: Sri.K.M.Aswatha Narayana, Kannala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	: Annual Maintenance and Re-asphalting of Sheeryhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Sheeryhalli Sub Division, BBMP, Bangalore.
* Reference	: EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	: RCC Drain Side Wall Concrete
Test Method as per	: IS - 516 : 1959 (RA-2018)
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day
Sample Received on	: 09.01.2021
Report Issue Date	: 09.01.2021

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	12.12.2020	09.01.2021	8.577	502.3	22.32
2	12.12.2020	09.01.2021	8.466	495.8	22.03
3	12.12.2020	09.01.2021	8.201	483.8	21.50

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Job No.: CTCE/BBMP/KMAN/CSR-280f/Cube/2020-21 22.12.2020

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	RCC Drain Side Wall Concrete
Test Method as per	:	IS - 516 : 1959 (RA-2018)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	7^{th} day
Sample Received on	:	22.12.2020
Report Issue Date	:	22.12.2020

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	15.12.2020	22.12.2020	8.497	352.5	15.67
2	15.12.2020	22.12.2020	8.510	345.0	15.33
3	15.12.2020	22.12.2020	8.309	319.0	14.18

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ಶಿವಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

M/s. Civil-Tech Consultants & Engineers

Pooja K.L.

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No: CTCE/BBMP/KMAN/CSR-280f/Cube/2020-21 12.01.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	RCC Drain Side Wall Concrete
Test Method as per	:	IS - 516 : 1959 (RA-2018)
Size of cubes	:	150mmx150mmx150mm
Cross Sectional Area	:	22500 mm^2
* Grade of Concrete	:	M_{20}
Compressive Strength as on	:	28^{th} day
Sample Received on	:	12.01.2021
Report Issue Date	:	12.01.2021

SLNo.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	15.12.2020	12.01.2021	8.471	489.4	21.75
2	15.12.2020	12.01.2021	8.396	510.4	22.68
3	15.12.2020	12.01.2021	8.555	473.9	21.06

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Pooja K. L.

Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.
Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/CSR-280f/Precast Slab/2020-21 23.12.2020

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CORE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Precast Slab (100 mm Thick)
* Grade of Concrete	:	M_{25}
Test Method As Per	:	IS - 516 (Part-4) : 2018
Sample Received on	:	21.12.2020
Date of Testing	:	23.12.2020
Report Issue Date	:	23.12.2020

Sl. No	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	80.00	0.359	2285.46	1.60	0.957	37.85	19.28	20.82	21.76	27.20
2	50.00	79.00	0.341	2198.35	1.58	0.955	36.51	18.59	20.08	21.04	26.30
3	50.00	81.00	0.498	3131.23	1.62	0.959	37.24	18.97	20.48	21.36	26.70

* Information is furnished by the Customer/Representative

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Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/GSB-5/GR/2020-21

21.10.2020

TEST REPORT ON GRADATION FOR GRANULAR SUB BASE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	GSB-(Grading V)
Test Method as per	:	IS - 2720 (Part 4) : 1985 (RA-2015), MORTH 400-1
Date of Testing	:	21.10.2020
Report Issue Date	:	21.10.2020

Oven Dry Wt (gm) : 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	100	100
53.0	345	345	6.90	93.10	80-100
26.50	1355	1700	34.00	66.00	55-90
9.50	970	2670	53.40	46.60	35-65
4.75	935	3605	72.10	27.90	25-50
2.36	835	4440	88.80	11.20	10-20
0.850	333	4773	95.46	4.54	2-10
0.425	140	4913	98.26	1.74	0-5
PAN	87				
Total	5000				

* Information is furnished by the Customer/Representative

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading V

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಕೆಂಪೇಗೌಡ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

M/s. Civil-Tech Consultants & Engineers

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e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/GSB-5/AL/2020-21

Date 21.10.2020

TEST REPORT ON ATTERBERG LIMITS TEST FOR GRANULAR SUB BASE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	GSB (Grading V)
Test Method as per	:	IS - 2720 (Part - 5) : 1985 (RA-2015), MORTH Table : 400-1
Date of Testing	:	21.10.2020
Report Issue Date	:	21.10.2020

Tests on filler screen materials (As per Table : 400-13)

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	24.00	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

* Information is furnished by the Customer/Representative

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading 5

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Pooja K.L.

Authorised Signatory

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Job No.: CTCE/BBMP/KMAN/WMM/Gradation/2020-21 11.11.2020

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	Asst. Executive Engineer, Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	Sri.K.M.Aswatha Narayana, Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386 (part-1) : 1963 (RA-2016)
Date of Testing	:	11.11.2020
Report Issue Date	:	11.11.2020

Oven Dry Wt (gm): 5000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-13
53	0	0	0	100	100
45	112	112	2.2	97.8	95-100
22.4	1533	1645	32.90	67.10	60-80
11.2	1020	2665	53.30	46.70	40-60
4.75	613	3278	65.56	34.44	25-40
2.36	481	3759	75.18	24.82	15-30
0.600	450	4209	84.18	15.82	8-22
0.075	600	4809	96.18	3.82	0-5

*Information is furnished by the Customer/Representative.

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Job No: CTCE/BBMP/KMAN/WMM/Gradation/2020-21 11.11.2020

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386 (part-1) : 1963 (RA-2016)
Date of Testing	:	11.11.2020
Report Issue Date	:	11.11.2020

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-13
53	0	0	0	100	100
45	120	120	2.4	97.6	95-100
22.4	1535	1655	33.10	66.90	60-80
11.2	1022	2677	53.54	46.46	40-60
4.75	618	3295	65.90	34.10	25-40
2.36	485	3780	75.60	24.40	15-30
0.600	475	4255	85.10	14.90	8-22
0.075	621	4876	97.52	2.48	0-5

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/KMAN/WMM/AIV/2020-21 11.11.2020

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386(Part -4) : 1963 (RA-2016)
Date of Testing	:	11.11.2020
Report Issue Date	:	11.11.2020

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	295	294	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	22.57	23.24	22.90

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/KMAN/WMM/Shape.T/2020-21 11.11.2020

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Wet Mix Macadam
Test Method as per	:	IS - 2386(Part 1) : 1963 (RA 2016)
Date of Testing	:	11.11.2020
Report Issue Date	:	11.11.2020

Sl.No.	Description	Result
1	Flakiness Index	15.78%
2	Elongation Index	10.59%
3	Combined Flakiness & Elongation Index	26.37%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 35%

Note:

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Job No.: CTCE/BBMP/KMAN/CSR-280f /QB(BC)/2020-21 Dated: 25.01.2021

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Bitumen
Source/ Location	:	Hot Mix Plant, Bangalore.
Sample Received on	:	23.01.2021
Period of Testing	:	23.01.2021 to 25.01.2021
Report Issue Date	:	25.01.2021

The results of the tests conducted on the bitumen sample are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013 (RA-2018) for VG 30
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2019)	49	Min. 45
2	Softening point (R & B), ^{0}C	IS :1205 -1978 (RA-2019)	48	Min. 47
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2019)	100	Min. 40
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2019)	297	Min. 220

* Information is furnished by the Customer/Representative

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Pooja K.L.

Authorised Signatory

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e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/BC/AIV/2020-21 25.01.2021

TEST REPORT ON IMPACT VALUE OF AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot mix plant, Bangalore.
* Type of Mix	:	Bituminous Concrete
Test Method as per	:	IS - 2386 (Part- 4) : 1963 (RA-2016)
Date of Testing	:	25.01.2021
Report Issue Date	:	25.01.2021

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	391	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	89	91	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	302	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	22.76	23.16	22.96

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/KMAN/BC/Shape.T/2020-21 25.01.2021

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot mix plant, Bangalore
Test Method as per	:	IS - 2386(Part -1) : 1963 (RA-2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	25.01.2021
Report Issue Date	:	25.01.2021

Sl.No.	Description	Result
1	Flakiness Index	12.54%
2	Elongation Index	13.95%
3	Combined Flakiness & Elongation Index	26.49%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 35%

Note:

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Job No.: CTCE/BBMP/KMAN/BC/Stripping/2020-21 28.01.2021

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
Test Method as per	:	IS: 6241
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	28.01.2021
Report Issue Date	:	28.01.2021

Type of binder : VG-30
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.20	96.80
2	3.3		
3	3.2		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%.

Note:

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Pooja K. L.

Authorised Signatory

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Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/KMAN/BC/Sp_Wa/2020-21 28.01.2021

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot mix plant, Bangalore
Test Method as per	:	IS - 2386(Part -3) : 1963 (RA-2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	28.01.2021
Report Issue Date	:	28.01.2021

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2003	2006	2005	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1250	
4	Weight of saturated surface dry aggregate in air	W_3 g	2014	2013	2012	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	775	775	762	
6	Weight of oven dried aggregate	W_4 g	1996	1998	1997	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.575	2.578	2.621	2.591
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.637	2.629	2.673	2.646
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.90%	0.75%	0.75%	0.80%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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For M/s. Civil-Tech Consultants & Engineers

Pooja K.L.

Authorised Signatory

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Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
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Job No.: CTCE/BBMP/KMAN/BC/Bitumen/2020-21 28.01.2021

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Roads from Shettyhalli Railway Gate to Abbigere Main Road, Ward No.12.
Test Method as per	:	IRC:SP:11-1984
Date of Testing	:	28.01.2021
Report Issue Date	:	28.01.2021

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	473.5	470.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26.50	29.50
7. Bitumen content in %	5.30	5.90
8. Average	**5.60**	

*Information is furnished by the Customer/Representative.

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Pooja K. L.

Authorised Signatory

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Job No.: CTCE/BBMP/KMAN/BC/Bitumen/2020-21 28.01.2021

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Roads from Shettyhalli Railway Gate to Abbigere Main Road, Ward No.12.
Test Method as per	:	IRC:SP:11-1984
Date of Testing	:	28.01.2021
Report Issue Date	:	28.01.2021

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-17 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	45.32	9.57	9.57	90.43	90-100
9.5	33.62	7.10	16.67	83.33	70-88
4.75	70.11	14.81	31.48	68.52	53-71
2.36	66.52	14.05	45.53	54.47	42-58
1.18	51.45	10.87	56.39	43.61	34-48
0.6	49.85	10.53	66.92	33.08	26-38
0.3	45.25	9.56	76.48	23.52	18-28
0.15	30.12	6.36	82.84	17.16	12-20
0.075	42.58	8.99	91.83	8.17	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-17 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	32.99	7.01	7.01	92.99	90-100
9.5	48.25	10.26	17.27	82.73	70-88
4.75	69.52	14.78	32.04	67.96	53-71
2.36	70.25	14.93	46.97	53.03	42-58
1.18	60.35	12.83	59.80	40.20	34-48
0.6	48.27	10.26	70.06	29.94	26-38
0.3	35.95	7.64	77.70	22.30	18-28
0.15	30.14	6.41	84.11	15.89	12-20
0.075	32.75	6.96	91.07	8.93	4-10

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Pooja K.L.
Authorised Signatory

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Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/BC/Agg/2020-21 28.01.2021

TEST REPORT ON GRADATION OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Bituminous Concrete
Test Method as per	:	IS - 2386(Part -1) : 1963 (RA-2016)
* Type of Mix	:	Hot mix plant, Bangalore
Date of Testing	:	28.01.2021
Report Issue Date	:	28.01.2021

Total Weight of Sample: **5200** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-17
13.2	426	8.19	8.19	91.81	90 - 100	
9.5	554	10.65	18.85	81.15	70 - 88	
4.75	638	12.27	31.12	68.88	53 - 71	
2.36	650	12.50	43.62	56.38	42 - 58	
1.18	535	10.29	53.90	46.10	34 - 48	
0.600	550	10.58	64.48	35.52	26 - 38	
0.300	682	13.12	77.60	22.40	18 - 28	
0.150	426	8.19	85.79	14.21	12 - 20	
0.075	485	9.33	95.12	4.88	4 - 10	

Total Weight of Sample: **5300** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-17
13.2	400	7.55	7.55	92.45	90 - 100	
9.5	480	9.06	16.60	83.40	70 - 88	
4.75	796	15.02	31.62	68.38	53 - 71	
2.36	599	11.30	42.92	57.08	42 - 58	
1.18	722	13.62	56.55	43.45	34 - 48	
0.600	560	10.57	67.11	32.89	26 - 38	
0.300	579	10.92	78.04	21.96	18 - 28	
0.150	389	7.34	85.38	14.62	12 - 20	
0.075	440	8.30	93.68	6.32	4 - 10	

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Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.. CTCE/BBMP/KMAN/BC/Stability/2020-21 28.01.2021

TEST REPORT ON MARSHALL STABILITY OF MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
*Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Source	:	Hot mix Plant, Bangalore
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	28.01.2021
Report Issue Date	:	28.01.2021

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-11)
1	Marshall Stability (Kn at 60°C)	9.55	9.80	9 Kn (min)
2	Marshall flow (mm)	2.59	2.92	2 – 4
3	Voids in Compacted Mix %	3.60	3.85	3 – 5
4	Percent voids in Mineral Aggregate (VMA)	13.36	13.71	Min 12
5	Percent Voids filled with Bitumen (VFB)	67.30	68.96	65 - 75
6	Density, g/cc	2.27	2.28	--

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Pooja K. L.

Authorised Signatory

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e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/CSR-280f/QB(DBM)/2020-21 Dated: 28.12.2020

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Bitumen
Source/ Location	:	Hot Mix Plant, Bangalore.
Sample Received on	:	26.12.2020
Period of Testing	:	26.12.2020 to 28.12.2020
Report Issue Date	:	28.12.2020

The results of the tests conducted on the bitumen sample are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013 (RA-2018) for VG 30
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2019)	50	Min. 45
2	Softening point (R & B), ^{0}C	IS :1205 -1978 (RA-2019)	49	Min. 47
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2019)	100	Min. 40
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2019)	296	Min. 220

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Pooja K. L.

Authorised signatory

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Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
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Ref No.: CTCE/BBMP/KMAN/DBM/AIV/20120-21 28.12.2020

TEST REPORT ON AGGREGATE IMPACT VALUE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot Mix Plant, Bangalore
Test Method as per	:	IS - 2386(Part -4) : 1963 (RA-2016)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	28.12.2020
Report Issue Date	:	28.12.2020

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	294	293	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.83	23.50	23.17

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27%

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ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಬಿ.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

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M/s. Civil-Tech Consultants & Engineers

Pooja K.L.

Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.
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Ref No: CTCE/BBMP/KMAN/DBM/AIV/20120-21 28.12.2020

TEST REPORT ON AGGREGATE IMPACT VALUE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot Mix Plant, Bangalore
Test Method as per	:	IS - 2386(Part -4) : 1963 (RA-2016)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	28.12.2020
Report Issue Date	:	28.12.2020

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	390	392	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	91	93	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	299	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	23.33	23.72	23.53

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27%.

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Job No.: CTCE/BBMP/KMAN/DBM/Shape.T/2020-21 28.12.2020

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot Mix Plant, Bangalore
Test Method as per	:	IS - 2386(Part -1) : 1963 (RA-2016)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	28.12.2020
Report Issue Date	:	28.12.2020

Sl.No.	Description	Result
1	Flakiness Index	11.24%
2	Elongation Index	12.37%
3	Combined Flakiness & Elongation Index	23.61%

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Flakiness & Elongation Index for Dense Graded Bituminous Macadam is 35%

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Pooja K. L.

Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.

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Job No.: CTCE/BBMP/KMAN/DBM/Stripping/2020-21 30.12.2020

TEST REPORT ON STRIPPING VALUE OF ROAD AGGREGATE (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
Test Method as per	:	IS: 6241
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	30.12.2020
Report Issue Date	:	30.12.2020

Type of binder : VG 30
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.2	3.23	96.77
2	3.1		
3	3.4		

* Information is furnished by the Customer/Representative

Comments:

→ Minimum allowable Aggregate retained coating for Dense Graded Bituminous Macadam is 95%

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

Note:

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⇒Any Query regarding the report must be reported within 30 days from the date of testing.

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M/s. Civil-Tech Consultants & Engineers

Pooja K.L.

Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.
Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/DBM/Sp.Wa/2020-21 30.12.2020

TEST REPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION TEST

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
Test Method as per	:	IS - 2386(Part -3) : 1963 (RA-2016)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	30.12.2020
Report Issue Date	:	30.12.2020

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2016	2013	2011	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1266	1263	1261	
4	Weight of saturated surface dry aggregate in air	W_3 g	2009	2012	2014	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	743	749	753	
6	Weight of oven dried aggregate	W_4 g	1999	1996	1997	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.690	2.665	2.652	2.669
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.727	2.723	2.713	2.721
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.80%	0.85%	0.72%

* Information is furnished by the Customer/Representative

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%

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For M/s. Civil-Tech Consultants & Engineers

Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.

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e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/DBM/Bitumen/2020-21 30.12.2020

TEST REPORT ON BITUMEN CONTENT OF DENSE GRADED BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Roads from Shettyhalli Railway Gate to Abbigere Main Road, Ward No.12
Test Method as per	:	IRC:SP:11-1984
Date of Testing	:	30.12.2020
Report Issue Date	:	30.12.2020

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	478.5	475.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	21.5	24.50
7. Bitumen content in %	4.30	4.90
8. Average	4.60	

* Information is furnished by the Customer/Representative

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Pooja K.L.

Authorised Signatory

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Job No.: CTCE/BBMP/KMAN/DBM/Bitumen/2020-21 30.12.2020

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION OF DENSE GRADED BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Roads from Shettyhalli Railway Gate to Abbigere Main Road, Ward No.12
Test Method as per	:	IS 2386 and IRC:SP:11-1984
Date of Testing	:	30.12.2020
Report Issue Date	:	30.12.2020

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-10 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	35.22	7.36	7.36	92.64	90 - 100
19	90.12	18.83	26.19	73.81	71 - 95
13.2	67.85	14.18	40.37	59.63	56 - 80
4.75	87.99	18.39	58.76	41.24	38 - 54
2.36	45.26	9.46	68.22	31.78	28 - 42
0.3	85.02	17.77	85.99	14.01	7 - 21
0.075	132.42	27.67	95.90	4.10	2 - 8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-10 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	42.12	8.86	8.86	91.14	90 - 100
19	87.62	18.43	27.28	72.72	71 - 95
13.2	72.56	15.26	42.54	57.46	56 - 80
4.75	91.24	19.19	61.73	38.27	38 - 54
2.36	42.23	8.88	70.61	29.39	28 - 42
0.3	75.44	15.87	86.48	13.52	7 - 21
0.075	113.25	23.82	94.43	5.57	2 - 8

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For Civil-Tech Consultants & Engineers

********** Raja K.L.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.

Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com

e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/DBM/Agg/2020-21 30.12.2020

TEST REPORT ON GRADATION FOR AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
* Sample ID	:	Hot Mix Plant, Bangalore
Test Method as per	:	IS - 2386(Part -1) : 1963 (RA-2016)
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	30.12.2020
Report Issue Date	:	30.12.2020

Total Weight of Sample: **5150** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
37.50	0.00	0.0	0	100	100	Gradation satisfies Grade II MORTH Table 500-10 specification
26.50	321.25	6.2	6.24	93.76	90 - 100	
19.00	846.32	16.4	22.67	77.33	71 - 95	
13.20	781.42	15.2	37.84	62.16	56 - 80	
4.75	1021.44	19.8	57.68	42.32	38 - 54	
2.36	583.62	11.3	69.01	30.99	28 - 42	
0.300	873.41	17.0	85.97	14.03	7 - 21	
0.075	399.85	7.8	93.73	6.27	2 - 8	

Total Weight of Sample: **5250** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade II MORTH Table 500-10 specification
26.5	306	5.8	5.83	94.17	90 - 100	
19	867	16.5	22.34	77.66	71 - 95	
13.2	865	16.5	38.82	61.18	56 - 80	
4.75	902	17.2	56.00	44.00	38 - 54	
2.360	588	11.2	67.20	32.80	28 - 42	
0.300	895	17.0	84.25	15.75	7 - 21	
0.075	449	8.6	92.80	7.20	2 - 8	

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e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/KMAN/DBM/Stability/2020-21 30.12.2020

TEST REPORT ON MARSHALL STABILITY OF MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Sri.K.M.Aswatha Narayana,** Karinala Village, Doddaballapura (T), Bangalore Rural (D)-562103.
* Name of the Work	:	Annual Maintenance and Re-asphalting of Shettyhalli Railway Gate to Abbigere Main Road and Surrounding Area in Ward No.12, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	EE/DD/W.O/115/2020-21 Date:09.10.2020
Source / location	:	Hot mix Plant, Bangalore
* Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	30.12.2020
Report Issue Date	:	30.12.2020

The results of the tests conducted on the Dense Graded Bituminous Macadam sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-11)
1	Marshall Stability (Kn at 60°C)	9.42	10.59	9 Kn (min)
2	Marshall flow (mm)	2.50	2.79	2 – 4
3	Voids in Compacted Mix %	3.46	3.96	3 – 5
4	Percent voids in Mineral Aggregate (VMA)	11.53	12.87	Min 11
5	Percent Voids filled with Bitumen (VFB)	67.79	69.98	65 - 75
6	Density, g/cc	2.28	2.29	–

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M/s. Civil-Tech Consultants & Engineers

Pooja K. L

Authorised Signatory

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagara, Bangalore-79.
Tele fax : 23223227, Cell : 93428 39190, Website : www.civiltechconsultants.com
e-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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